PROCEEDINGS
OF
THE ROYAL SOCIETY.

1836. No. 27.

November 17, 1836.

FRANCIS BAILY, Esq., V.P. and Treasurer, in the Chair.

The following Gentlemen were, by ballot, elected Auditors of the Treasurer's Accounts on the part of the Society, viz.: George Biddell Airy, Esq., A.R.; John Bostock, M.D.; the Rev. George Peacock, M.A.; William H. Pepys, Esq.; and the Rev. Adam Sedgwick, M.A.

"Researches in the Integral Calculus." Part II. By Henry Fox Talbot, Esq., F.R.S.

Having explained, in the first part of his paper, a general method of finding the sums of integrals, the author proposes, in the second place, to apply this method to discover the properties of different transcendents, beginning with those of the simplest nature. With this view, he first shows its application to the arcs of the circle and the conic sections; and demonstrates the possibility of finding three arcs, such that, neglecting their signs, the sum of two of them shall be equal to the third, though not superposable in any part: an equality which has been hitherto deemed impossible in the ellipse and hyperbola, without the addition of some algebraic quantity.

At a Special General Meeting of this Society, held after the ordinary Meeting of the 17th of November, to consider of an Address to H.R.H. the President, on the happy recovery of his sight, It was Resolved unanimously, That this meeting feels great pleasure in congratulating H.R.H. the President of this Society, on the happy restoration of his sight, a blessing which they sincerely hope he may long enjoy for his own happiness and for the benefit of science.

November 24, 1836.

FRANCIS BAILY, Esq., V.P. and Treasurer, in the Chair.

Sir Edward Thomason, being balloted for, was not elected into the Society.

"Investigation of New Series for the Rectification of the Circle." By James Thomson, LL.D., Professor of Mathematics in the University of Glasgow. Communicated by Francis Baily, Esq., V.P. and Treasurer R.S.

The author obtains formulæ by which the ratio of the circumference of a circle to its diameter may be computed with much greater facility and expedition than by any of the ordinary methods.

A paper was also in part read, entitled, "Inquiries respecting the Constitution of Salts, of Oxalates, Nitrates, Phosphates, Sulphates, and Chlorides." By Thomas Graham, Esq., F.R.S. Ed., Professor of Chemistry in the Andersonian University of Glasgow, &c. &c. Communicated by Richard Phillips, Esq., F.R.S.

Report upon a Letter addressed by M. LE BARON DE HUMBOLDT to HIS ROYAL HIGHNESS the PRESIDENT of the ROYAL SOCIETY, and communicated by His Royal Highness to the Council.

To His Royal Highness the President and Council of the Royal Society.

PREVIOUSLY to offering any opinion on the important communication on which we have been called upon to report, we feel that it will be proper to lay before the Council a full account of the communication itself. In this letter M. de Humboldt developes a plan for the observation of the Phenomena of Terrestrial Magnetism worthy of the great and philosophic mind whence it has emanated, and one from which may be anticipated the establishment of the theory of these phenomena.

After his return from the equinoctial regions of America, M. de Humboldt, in the years 1806 and 1807, entered upon a careful and minute examination of the course of the diurnal variation of the needle. He was struck, he informs us, in verifying the ordinary regularity of the nocturnal period, with the frequency of perturbations, and, above all, of those oscillations, exceeding the divisions of his scale, which were repeated frequently at the same hours before sunrise. These eccentricities of the needle, of which a certain periodicity has been confirmed by M. Kupffer, appeared to M. de Humboldt to be the effect of a reaction from the interior towards the surface of the globe—he ventures to say, of "*magnetic storms*"—which indicated a rapid change of tension. From that time he was anxious to establish to the east and to the west of the meridian of Berlin, apparatus similar to his own, in order to obtain corresponding observations made at great distances at the same hours, but was for a long period prevented putting his plan into execution by the disturbed state of Germany and his departure for France.

The Baron de Humboldt and MM. Arago and Kupffer having, by the cooperation of many zealous observers, succeeded in establishing permanent magnetic stations extending from Paris to China, M. de Humboldt solicits, through His Royal Highness the President, the powerful influence of the Royal Society in extending the plan, by the establishment of new stations. The plan which he proposes, and which has been successfully carried into execution over a large portion of the north-eastern continent, is that magnetical observations, whether of the direction of the horizontal and inclined needles, or for the determination of the variations of the magnetic force, should be made simultaneously at all stations, at short intervals of time, for a certain number of hours and at fixed periods of the year, precisely similar to the plan which has been recommended and adopted by Sir John Herschel with reference to observations of the barometer and thermometer.

Referring in terms of commendation to the magnetical observations which have originated in this country, M. de Humboldt expresses his wish that such observations may, by the adoption of an uniform plan, and by connecting them with the observations now in progress on the continent of Europe and of Northern Asia, be rendered more proper for the manifestation of great physical laws. He then enters into a historical detail of the establishment of stations for magnetical observations, stating the important results obtained by MM. Arago and Kupffer by means of simultaneous observations, which appear to establish the isochronism of the perturbations of the needle at Paris and Kasan, stations separated by 47° of longitude. Under the patronage of the Governments of France, of Prussia, of Denmark, and of Russia, magnetical observatories have been established at Paris, at Berlin, in the mines of Freyberg, at Copenhagen, in Iceland, at St. Petersburg, Kasan, Moscow, Barnoul at the foot of the Altai Chain, Nertschinsk near the frontiers of China, even at Pekin, and at Nicolajeff in Crimea.

M. de Humboldt states that the lines representing the horary variations at Berlin, Freyberg, Petersburg, and Nicolajeff affect parallelism, notwithstanding the great separation of the stations and the influence of extraordinary perturbations; that this, however, is not invariable, since even at small distances, for example, at Berlin and in the mines of Freyberg, one of the needles may show considerable perturbations, while the other continues that regular course which is a function of the solar time of the place.

The epochs at which it had been proposed that simultaneous observations should be made at all stations were,

20th and 21st of March
4th and 5th of May,
21st and 22nd of June,
6th and 7th of August,
23rd and 24th of September,
5th and 6th of November,
21st and 22nd of December,

from 4 o'clock in the morning of the first day, until midnight of the second, observing, at least hourly, night, and day, at each magnetic station.

But as many observers have considered these as too near to each other, the observations most to be insisted upon are those at the times of the solstices and equinoxes.

England from the times of Gilbert, Graham, and Halley to the present, observes M. de Humboldt, has afforded a copious collection of materials, adapted to the discovery of the physical laws which govern the changes of the variation, whether at the same place, according to the hours of the day and the seasons of the year, or at different distances from the magnetic equator and from the lines of no variation. After adverting to the continued observations of

Gilpin and of Beaufoy, omitting however to mention the important ones by Canton, he observes that the arctic expeditions have furnished a rich harvest of important observations to Captains Sabine, Franklin, Parry, Foster, Beechey, and James Ross, and Lieutenant Hood *; and that thus physical geography is indebted to the attempts which have been made to discover the north-west passage, and also to the explorations of the icy coast of Asia, by Wrangel, Lutke, and Anjou, for a considerable accession of knowledge in terrestrial magnetism and meteorology. Excited, he observes, by the great discoveries of Oersted, Arago, Ampere, Seebeck, and Faraday, MM. Hansteen, Due and Adolphe Erman have explored, in the whole of the immense extent of Northern Asia, the course of the isoclinal, isogonal, and isodynamic curves; and M. Adolphe Erman has had the advantage during a long voyage from Kamtschatka round Cape Horn to Europe, of observing the three manifestations of terrestrial magnetism on the surface of the earth, with the same instruments and by the same methods which he had employed from Berlin to the mouth of the Obi, and thence to the sea of Okhotsk.

M. de Humboldt remarks that our epoch, marked by great discoveries in optics, electricity, and magnetism, is characterized by the possibility of connecting phenomena by the generalization of empirical laws, and by the mutual assistance rendered by sciences which had long remained isolated. Now, he observes, simple observations of horary variation or of magnetic intensity made at places far distant from each other, reveal to us what passes at great depths in the interior of our planet or in the upper regions of our atmosphere: those luminous emanations, those polar explosions which accompany the "*magnetic storm*" appear to succeed the changes which the mean or ordinary tension of terrestrial magnetism undergoes.

M. de Humboldt considers that it deeply interests the advancement of mathematical and physical sciences that, under the auspices of His Royal Highness the President, the Royal Society should exert its influence in extending the line of simultaneous observations, and in establishing permanent magnetic stations in the tropical regions on both sides of the magnetic equator, in high southern latitudes, and in Canada. He proposes this last station because the observations of horary variation in the vast extent of the United States are yet extremely rare. Those at Salem, calculated by Mr. Bowditch, and compared by Arago with the observations of Cassini, Gilpin, and Beaufoy, may, he remarks, guide the observers in Canada, in examining whether there, contrary to what takes place in Western Europe, the (diurnal?) variation does not decrease in the interval between the vernal equinox and the summer solstice.

In a memoir published five years ago, M. de Humboldt states that he has indicated as stations extremely favourable for the advancement of our knowledge, New Holland, Ceylon, the Mauritius, the

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* To this long list we may now add the name of Captain Back; nor ought the name of Mr. Fisher to be omitted.

Cape of Good Hope, the Island of St. Helena, some point on the Eastern Coast of South America, and Quebec. In order, he observes, to advance rapidly the theory of the phenomena of terrestrial magnetism, or at least to establish with more precision empirical laws, we ought to extend and, at the same time, to vary the lines of corresponding observations; to distinguish, in the observations of the horary variations, what is due to the influence of the seasons, to a clear or a cloudy atmosphere, to abundant rains, to the hour of the day or night solar time, that is, to the influence of the sun, and what is isochronous under different meridians: we ought, in addition to these observations of the horary variation, to observe the annual course of the absolute variation, of the inclination of the needle and of the intensity of the magnetic forces, of which the increase from the magnetic equator to the poles is unequal in the American or Western, and in the Asiatic or Eastern hemisphere. All these data, the indispensable basis of a future theory, can acquire certainty and importance only by means of fixed establishments, which are permanent for a great number of years, observatories in which are repeated, at settled intervals and with similar instruments, observations for the determination of numerical elements.

Travellers, remarks M. de Humboldt, who traverse a country in a single direction and at a single epoch, furnish only the first preparations for labours which ought to embrace the complete course of the lines of no variation; the progressive displacement of the nodes of the magnetic and terrestrial equators; the changes in the forms of the isogonal and isodynamic lines; and the influence which, unquestionably, the configuration and articulation of the continents exert upon the slow or rapid march of these curves. He will, he considers, be fortunate if the isolated attempts of travellers, whose cause he has to plead, have contributed to vivify a species of research which must be the work of centuries, and which requires at once the cooperation of many observers, distributed in accordance with a well-digested plan, and a direction emanating from many great scientific centres of Europe; this direction, however, not being for ever restricted by the same instructions, but varying them according to the progressive state of physical knowledge and the improvements which may have been made in instruments and the methods of observation.

In begging His Royal Highness the President to communicate this letter to the Royal Society, the Baron de Humboldt disclaims any intention of examining which are the magnetic stations that at the present time deserve the preference, and which local circumstances may admit of being established. It is sufficient that he has solicited the cooperation of the Royal Society to give new life to a useful undertaking in which he has for many years been engaged. Should the proposition meet with their concurrence, he begs that the Royal Society will enter into direct communication with the Royal Society of Göttingen, the Royal Institute of France, and the Imperial Academy of Russia, to adopt the most proper measures to combine what is proposed to be established with what already exists;

and adds, that, perhaps, they would also previously concert upon the mode of publication of partial observations and of mean results.

M. de Humboldt finally refers to the labours and accurate observations of M. Gauss at the Observatory of Göttingen. The methods, however, adopted by M. Gauss being already before the Royal Society in a memoir which has been communicated by him, renders it unnecessary here to enter into the explanation given of them by M. de Humboldt. He has referred to them in order that those members of the Royal Society who have most advanced the study of terrestrial magnetism, and who are acquainted with the localities of colonial establishments, may take into consideration, whether, in the new stations to be established, a bar of great weight furnished with a mirror should be employed, or whether Gambey's needle should be used: his wish is only to see the lines of magnetic stations extended, by whatever means the precision of the observations may be attained.

M. de Humboldt concludes by begging His Royal Highness to excuse the extent of his communication. He considered it would be advantageous to unite under a single point of view what has been done or prepared in different countries towards attaining the object of great simultaneous operations for the discovery of the laws of terrestrial magnetism.

Having very fully laid before the Council the contents of M. de Humboldt's letter, we have now to offer our opinion upon the subject it embraces. There can, we consider, be no question of the importance of the plan of observation which is here proposed for the investigation of the phenomena of terrestrial magnetism, or of the prospect which such a plan holds out of the ultimate discovery of the laws by which those phenomena are governed. Although the most striking of these phenomena have now been known for two centuries, although careful observations of them have within that period been made, and that still more care and attention have been bestowed upon those more recently discovered, yet the accessions to our knowledge, not only regarding the cause of the phenomena, but even with respect to the laws which connect them, bears a very small proportion to the mass of observations which have been made. This has arisen in a great measure, if not wholly, from the imperfection of the data from which attempts have been made to draw conclusions. Whatever theories may have been advanced in explanation of these phenomena, or attempts made to connect them by empirical laws, still, whenever comparisons have been instituted between the results of observation and such theories or laws, it has, in general, been doubtful whether the discrepancies which have been found might not as justly be attributed to errors in the observations, as to fallacies in the theory or incorrectness in the laws. Under these circumstances, the Royal Society, as a society for the promotion of natural knowledge, cannot but hail with satisfaction a proposition for carrying on observations of phenomena most interesting in their nature and most obscure in their laws, in a manner that shall not only give greater precision to the observations, but at the same time render all the results strictly comparative.

There are, however, other grounds on which such a proposition as that made by M. de Humboldt should be most cordially received by the Royal Society. This Society is here called upon, as a member of a great confederation, to cooperate with several other members, already in active cooperation, for the attainment of an object which ought to be common to all; and to such a call the Royal Society can never be deaf. Those who know best what has been done by cooperation on a well-digested system, and what remains undone in many departments of science for the want of it, can best appreciate the benefits that would accrue to science, by the adoption of the extensive plan of cooperation advocated by M. de Humboldt. Independently of our acquiring a knowledge of the laws which govern the phenomena here proposed to be observed, we ought to look to the effect which the adoption of such a plan may have on other branches of science. The example being thus once set of extensive cooperation in a single department of science, we may anticipate that it would be eagerly adopted in others, where, although our knowledge may be in a much more advanced state than it is regarding the phenomena of terrestrial magnetism, still much remains to be accomplished, which can scarcely be effected by any other means. We might thus hope to see the united efforts of all the scientific societies in Europe directed to the prosecution of inquiry, in each department of science, according to the plan of cooperation best adapted for its development.

We must now, after these remarks on the general bearing of M. de Humboldt's communication, go somewhat into detail on points connected with it. One point of view in which we consider the proposed plan of great importance, and to which M. de Humboldt has not expressly referred, is this. However defective ordinary dipping instruments may be considered to be, there are few persons who have had opportunities either of making observations with the ordinary instruments for determining the variation of the needle, or of comparing those made by others by the usual methods with such instruments, who will not admit that these instruments and methods are fully as defective—possibly much more so. Thus, however we may multiply the points on the earth's surface at which such observations may be made, still great uncertainty must always rest upon such determinations of these two important elements; and in all comparisons of such observations with laws, whether empirical or deduced from theory, it will ever be doubtful whether the discordances which may be found are due to errors of observation, or are indicative of the fallacy of these laws. This source of uncertainty must, in a great measure, if not wholly, be obviated by observations made at fixed stations, with instruments of similar construction, which have been carefully compared with each other. And we have no hesitation in stating our opinion that more would be done in determining the positions of the poles of convergence and of verticity on the earth's surface and other points, most important towards the establishment of anything like a theory of terrestrial magnetism, by simultaneous observations made at a few well-chosen fixed stations, than by an almost indefinite multiplication of observations by the ordinary methods.

That a magnetic chart that should correctly exhibit the several lines of equal variation, Humboldt's "Isogonal Lines", would be of the greatest advantage to navigation, those who are best qualified to judge are most ready to admit. If to these lines were added the isoclinal lines, or lines of equal dip, the value of such a chart would, for the purposes of navigation in particular, be greatly enhanced. Whatever may be the magnitude of the influence of the iron in a ship on its compass needle, the extent of the deviation of the horizontal needle due to that influence, on any bearing of the ship's head, is a function of that bearing and of the dip of the needle at the place of observation. The extent, therefore, of the horizontal deviations, in various bearings of the ship's head, having been ascertained at any port where the dip of the needle is known, their extent at any other place, however distant, at which the dip is also known, may readily be calculated. Consequently a chart which should correctly exhibit the isoclinal, in conjunction with the isogonal, lines, would readily furnish the means of obtaining the correction to be applied to the ship's course by compass, both for the variation of the needle and for the deviation due to the ship's influence upon its compass. Whatever charts of this description may have already been constructed, and whatever materials may exist for the construction of more accurate ones, it is well known that great discrepancies exist among the data requisite for such constructions. And it appears to us that such a careful inquiry into the whole of the phenomena of terrestrial magnetism as is proposed by M. de Humboldt, is the means best adapted to ensure the accuracy which would be of such inestimable advantage in this most useful application of scientific knowledge.

Although our views with regard to the stations proper to be selected for permanent magnetical observatories in general accord with those expressed by M. de Humboldt, we shall, we consider, be only conforming to his wishes, if we point out those stations which, from particular circumstances of position, appear most desirable. We consider that it would be of the greatest advantage if two or more permanent magnetical observatories were established in the high latitudes of North America, on account of the proximity of stations so situated to the northern magnetic poles of convergence and verticity, whether these poles are two different points or one and the same: indeed, continued observations at such stations would go far to decide this question, highly important in a theoretical point of view. M. de Humboldt has mentioned Quebec as a desirable station. To this place, and also to Montreal, we conceive that an objection exists, of which possibly M. de Humboldt is not aware: many of the houses in those cities are roofed with tinned iron. This objection may not, however, exist in some of the establishments in the vicinity of either of these cities. We consider that the most advantageous positions would be, one near the most northerly establishments in Hudson's Bay, and another at or near to Fort Resolution on Great Slave Lake. As, however, observers in such positions would be placed almost beyond the pale of civilization, we fear that, for some time at least, it will be found quite impracticable to obtain regular observations at these important stations. It would likewise be desirable that there should be a station in Nova Scotia or Newfoundland: the latter would be the preferable position.

If the Government of the United States were to give their cordial cooperation to M. de Humboldt's plan, by the establishment of three or more permanent magnetical observatories, in different longitudes, these, with what we may expect to be undertaken by Russia in the extreme north-west, and our own establishments, would afford the means of obtaining a mass of more interesting magnetical observations than could perhaps be derived from any other portion of the earth's surface.

M. de Humboldt mentions New Holland, Ceylon, the Mauritius, the Cape of Good Hope, St. Helena, and a point on the east coast of South America, as desirable stations, and we fully concur in the propriety of the selection. Although Van Diemen's Land, from its greater proximity to the southern magnetic pole, would be a more advantageous position for magnetical observations than Paramatta, yet the circumstance alone of there being an astronomical observatory established at Paramatta, renders it peculiarly adapted for a magnetical station. Possibly circumstances may hereafter admit of magnetical observations being also made at Hobart Town, in conformity with the general plan which may be adopted.

The Island of Ascension, from its proximity to the magnetic equator, would possess peculiar advantages for a magnetical station; but these must, in a great degree, be counterbalanced by the nature of its soil, which, being wholly volcanic, would exert an influence on the needle that would render observations made there of a doubtful character: indeed, the same objection applies to St. Helena and most of the islands of the Atlantic. Some recent observations, those of Lieut. Allen, R.N., in the expedition up the Niger, would point to the Bight of Benin as a desirable station; but the insalubrity of the climate and other circumstances prevent our recommending its adoption.

M. de Humboldt has not referred to any station in our West Indian colonies, but we consider that circumstances point to Jamaica as a station where it is very desirable that accurate magnetical observations should be made. It is generally considered that the variation there has, for a very long period, undergone but little change; and, on this account alone, it would be very desirable to ascertain, with precision, the amount of the variation, so that hereafter the nature of the changes it may undergo may be accurately determined. Its position also, with reference to the magnetic equator, is one which would recommend it as a magnetical station *.

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* Mr. Pentland, who has been appointed Consul-General to the Republic of Bolivia, having, since the Baron de Humboldt's letter was referred to us,

Although M. de Humboldt has not adverted to any other point besides Ceylon in our Indian possessions, yet no doubt he would, with us, consider it desirable that observatories should be established at different points on the continent of India; and it appears to us that Calcutta and Agra are in positions well adapted for the purpose. As, however, there is an Astronomical Observatory established at Madras, there would be greater facility in obtaining magnetical observations there than at places where no such establishment exists. We feel assured that the East India Company, which has shown so much zeal and liberality in the promotion of scientific inquiry, and such a desire for the advancement of scientific knowledge in the extensive possessions under its controul, would afford its powerful assistance in the establishment of observatories for the investigation and determination of the laws of phenomena intimately connected with navigation, and, consequently, with the commercial prosperity of our country.

We consider, also, that Gibraltar and some one of the Ionian Islands are very desirable stations for the establishment of permanent magnetical observatories; and, to come nearer home, that such observatories should be established in the North of Scotland and in the West of Ireland.

M. de Humboldt adverts to another very interesting class of magnetical observations, those in the mines of Freyberg. The mines of Cornwall from their great depth, some being 1200 feet below the level of the sea, are peculiarly well adapted for observations of this description; and, from the spirit with which philosophical inquiry has been carried on in that part of England, we do not anticipate that much difficulty would occur in the establishment of a magnetical station in one of these mines.

Having enumerated the stations which by their position appear best adapted to furnish valuable results, and having likewise pointed out the facilities which some afford for the execution of this plan of observation, immediately that the nature of the instruments to be employed has been determined upon, and that such instruments can be provided, it may be proper to advert to stations where, although the same facilities do not exist, we consider that zealous and able observers might be obtained without much difficulty. We conceive that such is the case in Newfoundland, in Canada, at Halifax, Gibraltar, in the Ionian Islands, at St. Helena, and Ceylon; and we have authority for stating that there would be no difficulty in obtaining observers in the Mauritius, and even at the colony on the

offered his earnest cooperation in the objects contemplated in that letter, we cannot hesitate, now that this has been communicated to us, to recommend that an offer so liberal should be made available to science. If accurate magnetical observations were made at some station on the elevated table-land of Mexico, and simultaneously at another not very distant station, nearly at the level of the sea, we consider that they would determine points relative to the influence of elevation on the diurnal variation, the dip and intensity, respecting which our information is at present, to say the least, extremely deficient.

Swan River, the latter being a most desirable station. We have not alluded to the observatory at the Cape of Good Hope; if however no such establishment existed, the presence of Sir John Herschel would ensure cooperation there, in any plan calculated to advance scientific knowledge. Thus, altogether, there might be formed a most extensive spread of stations, in which the principal expense would consist in the purchase of the requisite instruments; and the means of establishing stations where the same facilities do not exist might afterwards be taken into consideration. As it would be necessary that, at all the stations, observations of the barometer, thermometer, and of atmospheric phenomena should be made simultaneously with the magnetical observations, these would altogether form a mass of valuable meteorological information which it would be scarcely possible to collect by any other means.

There is one point in M. de Humboldt's communication on which we have not yet touched: the nature of the instruments best calculated to attain the objects in view by the establishment of magnetical observatories. This is a subject on which it will be most proper to enter fully when their establishment has been determined upon; and we would recommend that then a Committee should be appointed to investigate the subject, and that this Committee should report to the Council of the Royal Society what instruments they consider it would be most advisable to adopt at all the stations, and, at the same time, give in an estimate of the expense that must be incurred for one complete set of such instruments. We may, however, in the mean time, offer a remark on one apparatus referred to by M. de Humboldt, that of M. Gauss. However well we may consider this apparatus to be adapted for the determination of the course of the regular diurnal variation, yet we apprehend that the great weight of the needles employed would prevent their recording the sudden and extraordinary changes in the direction of the magnetic forces, which are, probably, due to atmospheric changes. Another, and we conceive a very serious objection to this apparatus is, that bars of the magnitude employed must have an influence so widely extended, that there would be great risk of the interference of one of these heavy needles with the direction of another, especially in places where the horizontal directive force is greatly diminished, unless the rooms for observation were placed at inconvenient distances from each other.

By referring to M. de Humboldt's letter, it will be seen that the plan of observation so comprehensively conceived by him, has been most powerfully and liberally patronized by the Governments of France, of Prussia, of Hanover, of Denmark, and of Russia: indeed, it is quite manifest that a plan so extensive in its nature must be far beyond the means of individuals, and even of scientific societies unaided by the governments under which they flourish. To suppose, even without the example thus held out, that the Government of this, the first maritime and commercial nation of the globe, should hesitate to patronize an undertaking, which, independently of the accessions it must bring to science, is intimately connected with navigation, would imply that our Government is not alive either to the interests or to the scientific character of the country, and would show that we had little attended to the history, even in our own times, of scientific research, which has been so liberally promoted by the Government. Although the investigation of the phenomena of terrestrial magnetism was not the primary object of the expeditions which have now, almost uninterruptedly, for twenty years been fitted out by Government,—another of which, and one of the highest interest, is on the point of departure,—yet a greater accession of observations of those phenomena has been derived from these expeditions than from any other source in the same period. We therefore feel assured that, when it shall have been represented to the Government that the plan of observation advocated by the Baron de Humboldt is eminently calculated to advance our knowledge of the laws which govern some of the most interesting phenomena in physical science; it appears to be perhaps the only one by which we can hope ultimately to discover the cause of these phenomena; and that, from it, results highly important to navigation may be anticipated—that the patronage to the undertaking which is so essential to its prosecution will be most readily accorded. We beg, therefore, most respectfully, but at the same time most earnestly, to recommend to His Royal Highness the President and to the Council, that such a representation be made to the Government, in order that means may be ensured for the establishment, in the first instance, of magnetical observatories in those places which, from local or other causes, afford the greatest facilities for the early commencement of these observations.

S. HUNTER CHRISTIE.
G. B. AIRY.

9th June, 1836.

November 30, 1836.

At the Anniversary Meeting of the Royal Society, H.R.H. the Duke of Sussex, K.G., President, in the Chair,

William Hasledine Pepys, Esq., one of the Auditors on the part of the Society, reported, that the balance in the Treasurer's hands at the recent Audit was £533. 4*s.* 11*d.*: and that the statement of the receipts and payments was laid on the table for the inspection of the Fellows.

The Thanks of the Society were voted to the Auditors for their trouble in auditing the Treasurer's Accounts.

The following Lists of the Fellows admitted, and of those deceased during the past year, were read:

Admitted.—George Biddell Airy, Esq., A.R.; Robert Alexander, Esq.; David Baillie, Esq.; Richard Beamish, Esq.; George Budd, A.B. and M.; Major T. Seymour Burt; Edward Burton, Esq.; Dr. William Clark; John Green Cross, Esq.; Captain John James Chapman, R.A.; William Sands Cox, Esq.; George William Drory, Esq.; Charles Elliott, Esq.; G. W. Featherstonhaugh, Esq.;

Joshua Field, Esq.; Robert Edmund Grant, M.D.; Rev. William B. L. Hawkins, M.A.; Edward John Johnson, Captain R.N.; John D. Llewelyn, Esq.; Captain Thomas Locke Lewis, R.E.; Rev. Humphrey Lloyd, M.A.; Francis Marcet, Esq.; Sir William Molesworth, Bart.; Earl of Minto; Moses Montefiore, Esq.; Dr. Archibald Robertson; the Rev. William Taylor; Charles Wheatstone, Esq.

Deceased: on the Home List.—John Bell, Esq.; William Blane, Esq.; Richard Blanshard, Esq.; the Right Honourable Reginald Pole Carew; Lewis Andrew de la Chaumette, Esq.; Lord Bishop of Ely; Sir William Gell; Dr. Gillies; William Henry, M.D.; James Horsburgh, Esq.; David Hosack, M.D.; William Lax, Esq.; William E. Leach, M.D.; William Marsden, Esq.; William M. Pitt, Esq.; John Pond, Esq.; Richard Saumarez, Esq.; Sir John Sinclair, Bart.; Rev. G. A. Thursby; Pelham Warren, M.D.; William R. Whatton, Esq.; Sir Charles Wilkins, K.H.; Grant David Yeats, M.D.

On the Foreign List.—Monsieur Ampère; Monsieur Jussieu.

His Royal Highness the President, then addressed the Society in the following words:—

GENTLEMEN,

I APPEAR before you, after an absence of two years from this chair, under circumstances which deeply affect my feelings. I have been secluded, during nearly the whole of that period, from the active business of life and of society, by the slow but sure approaches of almost total blindness; by preparations for a most delicate and, to me, most important operation, and by the precautions which were necessary to accomplish my recovery, after it had been most skilfully and successfully performed. In resuming now, therefore, my public duties in this place, I feel sensibly the novelty of my situation, as if I were entering, by the blessing of God, upon a new tenure of existence, which, whilst it offers to my view many prospects of happiness, imposes upon me likewise heavy responsibilities; and I can only express my fervent hope and prayer, that the same merciful Providence which has vouchsafed, through his appointed means, to restore me to sight, may enable me, like a willing and humble-minded scholar, to apply the lessons taught me by the experience of my past life, to the just and useful regulation of that portion of my course which I may be still permitted to run.

It is my first and most pleasing duty, Gentlemen, to thank you for your congratulations upon my recovery, which have been conveyed to me in terms most grateful to my feelings. I have on many occasions experienced both your kindness and forbearance, and I deeply regret that circumstances should so frequently have compelled me to appeal to them: but at no moment could the expression of your good-will be more welcome to me than at the present, when I am enabled to reappear amongst you, upon being again entrusted with the possession of that blessing, the value of which I have learnt to appreciate more fully by my experience of its privation.

Could I have foreseen, when the progress of my malady first removed me from public life, the length of time which was to elapse before its termination, even in case I could have felt assured that it would end as fortunately as it has for me, I would not have ventured to trespass, so long as I have done, upon your indulgence, but would at once have retired from the proud situation of your President; for though I could rely with perfect confidence upon the cordial cooperation of the members of the Council, and should have felt satisfied that they would not allow the real interests of the Society to suffer from my absence, yet I could not have continued altogether free from alarm, lest its dignity should be lowered in public estimation, were its affairs long allowed to be conducted with an incomplete establishment; or the becoming authority of this Chair should be lessened by frequent changes in its occupation, particularly on great and public occasions. I was always led to believe that the disease under which I laboured would have been sufficiently advanced to justify an operation much sooner than eventually proved to be the case, and I was therefore induced to hope that my absence from the Society would not have been prolonged for such a period as to be productive either of reasonable complaint, or of serious inconvenience. When, however, the day of your last Anniversary approached, and that hope had proved delusive, I felt it my duty to resign my trust, however reluctant to sever myself from a body with which I am so honourably connected; and I only consented to continue in its occupation, when kindly pressed to do so by the members of the Council, under the conviction that the time for performing the operation was so near at hand, that its success or failure would speedily decide whether I should be capable of again taking an active part in our concerns, or be compelled to terminate my official connexion with you for ever. I thank God that I am now enabled, in person, to express my heartfelt gratitude for your kindness to me on all occasions, and especially on the present; and I beg you to feel assured that the remembrance of your sympathy with my affliction whilst it continued, and of your warm congratulations upon my happy recovery, will ever tend to cement more closely the ties of affection and friendship which subsist between me and the Fellows of the Royal Society.

My necessary absence from my duties amongst you will prevent my entering in much detail upon the ordinary transactions of the Council, and of our weekly meetings during the last year; for a particular statement of which I must refer to the Report of the Council, which will be read to you by one of your Secretaries, Dr. Roget. There are only two topics connected with them to which I feel myself particularly called upon to allude.

The first is the publication of the classed catalogue of our library; the second relates to the discussions which have been attempted to be raised upon the Minutes of your proceedings on the ordinary days of your assembling during the last year.

It is well known to you, Gentlemen, that, after the transfer of the Arundelian MSS. to the British Museum, and the great additions which your library received from purchases and exchanges of books, necessarily consequent upon that transaction, Mr. Panizzi was employed by the Council to draw up a classed catalogue of its contents. Such a compilation it was considered would be of great value, not merely to the Fellows of the Society but to men of science generally, by making known to them the treasures of a library singularly rich and complete in journals, and works on mathematical, physical, astronomical, and anatomical science, and by presenting them in such a form that persons engaged in works of research, or in any specific subject of scientific inquiry, might be made at once acquainted with nearly all the sources from whence they could derive information. This catalogue is now printed, or more correctly speaking, *composed*, and is undergoing such a revision from different Members of the Council, who have kindly undertaken this task, as is calculated to make it as correct and complete as the circumstances of the case will allow it to be. I have reason to hope that this work will be shortly placed in the hands of the Fellows, and that the example which it will present of what may be accomplished by the exertions of a learned body with very limited funds at its command, will not be without its influence in hastening the completion of a similar work with respect to our great national library, upon a scale proportionate to its importance, and worthy of a great and wealthy people, amongst whom literature, science, and the arts are duly cultivated and pursued.

The discussions that have at different times during the last year been raised upon the Minutes of your proceedings, constitute the second subject which I wish especially to notice.

I am quite sure, Gentlemen, that you will agree with me in thinking, that no one circumstance has contributed so effectually to maintain the dignity of the Royal Society, as the prohibition of personal debate in the transaction of its ordinary business; and if I wished for any additional confirmation of this opinion, I would appeal to the very serious amount of irritation which it produced amongst you in the course of the last year, though originating in the most trivial causes. It was chiefly with a view to avoid inconveniences of this kind, and to provide an outlet for the proper expression of opinion, when any just occasion of complaint might exist, or any extraordinary circumstance occur, and to terminate disputes whenever unfortunately they might arise, that the Council, at the last revision of our statutes, passed a by-law, as they were fully authorized to do, which makes it imperative upon the President and Council to call an extraordinary meeting of its Members, upon the due presentation of a requisition for that purpose, signed by at least six Fellows, and setting forth, in specific terms, the objects for which it was required to be summoned, provided those objects be not inconsistent with the charter and statutes of the Society. Such extraordinary meetings being strictly domestic, and confined to the Fellows of the Society only, appear to me not merely to offer a sufficient security against any great mismanagement of the affairs of the establishment, but likewise to protect your ordinary meetings from those irregular and somewhat tumultuary discussions on matters of business, or personal conduct, which might otherwise be in danger of arising.

I believe that many persons have expressed a wish that the regulations of this Society should be so far relaxed as to allow, in conformity with the practice of some other similar establishments, discussions upon the papers, and those papers only, which are read before us: I confess, for my own part, that I am not at present prepared to accede to this recommendation. A practice which has been sanctioned by the usage of more than a century and a half, and found to be productive of scientific results unrivalled for their extent and value, should not be abandoned by us without the most mature consideration; and though I am the last person to recommend a slavish submission to the dictates or to the customs of antiquity, which may be unsuited either to the altered circumstances of modern times, or incapable of defence upon other and independent grounds, yet a reverence is justly due both to maxims and observances which have been sanctioned by high authorities, or connected with great and important public benefits. It may be quite true that such discussions would tend materially to increase the personal interest which is taken, by many of our members, in our proceedings; but when we consider the abstract and abstruse nature of many of the papers which come before us, and which no single reading can make perfectly intelligible, even to the best-instructed hearer, as well as the vast variety of subjects which they comprehend, I think we may fairly infer that such discussions would rarely add much to the stock of facts or of reasonings which they contain, or that their influence would be materially felt in the publications of your Transactions, which have always formed, and which ought always to form, the great object of the foundation of this Society, and the only means by which its character and influence can continue to be maintained unimpaired throughout the civilized world. When we likewise take into further consideration the irregularities and personalities to which such debates would on some occasions give rise, unless very strictly limited and very authoritatively controlled, as well as the indirect influence which the premature expression of opinions upon the contents and merits of individual papers might exercise upon the decision of the Council in selecting them for publication, you will be disposed to agree with me, I trust, in thinking that such an experiment would be at least dangerous to the peace, as it very possibly might prove ultimately injurious to the scientific character, of the Royal Society.

But let me not be misunderstood: the success that has attended this practice in the institution which has contributed so powerfully to the rapid advance of a highly popular science, might appear to offer a practical refutation of such grounds of alarm as those which I have ventured to suggest; but the cases of the two Societies are extremely different. The science of geology is eminently a science of observation, where facts, collected from all quarters of the globe, and accurately recorded, possess a value which is in many cases independent of the theoretical inferences that may be deduced from them: it is a science which disdains not the aid of the humblest labourers who can widen the range of its observations; it is a science also in which both facts and theories can be communicated more accurately and more rapidly by a graphic and vivid oral description, aided by an immediate reference to maps, drawings and specimens, than by the most elaborate and laborious written descriptions; it is a science which can only be learnt by being seen, and which can only be seen through ten thousand eyes. In all these, and in many other important particulars, it differs from the majority of those sciences which most commonly come under the notice of the Royal Society; and the many circumstances which not only justify, but in some degree render necessary, the discussions upon the papers read, or the facts communicated to the Geological Society, would almost entirely cease to apply if extended to us. And when we further consider the varied knowledge and accomplishments, the lively wit and rare eloquence of many of those distinguished men who usually take part in those debates, and who are themselves the highest authorities in the very science which on such occasions they are called upon to illustrate and to teach, we should be disposed rather to regard them as lectures delivered by great masters to pupils who come to learn, than as the discourses of philosophers, amongst each other, upon the more abstract and less attractive departments of human knowledge.

And now, Gentlemen, before I conclude this portion of my address, there remains but one other point which I think it my duty to notice. A trust of great importance, imposed on the President of the Royal Society by the will of the last Earl of Bridgewater, the most onerous and responsible duties of which devolved upon my worthy friend and predecessor Mr. Davies Gilbert, is at length terminated, by the appearance, which has been long and anxiously expected, of the eighth Treatise of the series. It would ill become me to speak of the mode in which that important duty was discharged by him, or of the principles which guided himself and his distinguished assessors, in the selection either of subjects or of the authors; but a list which is headed by the name of Whewell and closed by that of Buckland, can hardly be considered as an unworthy representation of the science and literature of this country.

Amongst the losses sustained by the Society during the last year, will be found many names of persons distinguished for their services both in literature and in science; and if we might be allowed to form a judgement from the very great proportion of these eminent men whose ages have approached the extreme limits of human life, we might conclude with great confidence that the most severe studies and the most trying climates, if pursued with temperance or guarded against with care, are not unfavourable either to health or longevity. The list which has been placed in my hands contains the names of twenty-one Fellows and two Foreign Members, and I greatly regret that the notice which I am enabled to take of some of the most distinguished of their number should be necessarily so slight and imperfect.

Mr. Pond succeeded Dr. Maskelyne as Astronomer Royal in 1810, and retired from that important situation, under the pressure of many infirmities, in the autumn of last year: he was formerly a member of Trinity College, Cambridge, where he was a pupil of Professor Lax, whose name appears also in the list of deaths which has been just read to you. After leaving the University, he travelled in many parts of the East, and particularly in Egypt, partly urged by the spirit of adventure which is natural to youth and partly with a view of making astronomical observations in climates more pure and more regular than our own. After his return home in 1800, he settled at Westbury, in Somersetshire, and devoted himself, amidst other pursuits, chiefly to astronomy, making use of a circular instrument of 2½ feet diameter, which had been constructed and divided by Troughton with more than ordinary care. With this instrument he observed by a peculiar method, the declinations of some of the principal fixed stars, which were communicated to the Royal Society in 1806; and it afterwards enabled him to establish the fact of a change of form in the great quadrants at Greenwich, a discovery of great importance, inasmuch as it not only led to the substitution of circular instruments for them in our national observatory, but subsequently likewise to his own appointment as Astronomer Royal.

After Mr. Pond's establishment at Greenwich, he communicated to the Royal Society from time to time, not merely the general results of his labours, but likewise his views of the theory of astronomical observations and of the grounds of judging of their relative accuracy: his system was to observe differences of declination and right ascension, making every star a point of departure for the rest, and considering the pole as a point in the heavens whose position was capable of a determination, equally, and not more accurate than that of any given star. To such a view of the theory of observation, circular instruments were particularly adapted, and there is no reason to doubt that the relative catalogues of the stars which were formed by Mr. Pond were more accurate and complete than those of any preceding or cotemporary observer. Such a result, however, might have been reasonably expected from the great powers and resources of the establishment over which he presided and which he had himself been the chief means of calling into action.

The method which was adopted by Mr. Pond to determine the limits of the annual parallax of certain fixed stars by means of fixed telescopes of great focal length, was singularly ingenious and complete. The existence and amount of such a parallax had been asserted and assigned by Dr. Brinkley, in α Lyræ, α Aquilæ, and α Cygni; but this opinion, although most ingeniously and even obstinately vindicated and maintained by him, was, in the judgement of most other astronomers, most decisively negatived by Mr. Pond, who showed that the parallax of those fixed stars, supposing its amount to be sensible, was confined within the limits of the errors of the most delicate and perfect observations which have been hitherto made. There is no great question in astronomy, the present position and limits of which are more satisfactorily settled.

Mr. Pond was remarkable for his skill and delicacy in the manipulation of his instruments, and no man was more capable of forming a correct judgement of their capacities and powers, and of the nature and extent of the errors to which they were liable: he was in the habit of placing great reliance on the results of a great number of observations, when no apparent or assignable cause existed for giving a determinate sign or character to the errors of individual observations: this confidence, however, was founded on his great knowledge of the theory of observation, and was fully justified by a comparison both of his own results with each other, and with those of other observers.

Mr. Pond was a man of gentle and amiable character, and singularly candid and unprejudiced. His health for many years before his death was greatly deranged, but he continued to struggle against the progress of his infirmities, and, from a conscientious feeling, he never abandoned the active duties of superintending the observatory, though hardly able to sustain them. He died in August last, at Lee, in Kent, and was buried in the tomb of his great predecessor Halley.

Mr. Pond, though a great practical astronomer and a man of uncommonly clear intellect and correct judgement, was deficient in one very considerable qualification for the station which he filled,—I mean, an acquaintance with the higher branches of Analysis, and their application to Physical Astronomy. His successor, Gentlemen, is well known to you, and needs no eulogium of mine; but I cannot omit the opportunity which is now offered to me of congratulating the friends of astronomy and of science on the appointment of a gentleman to this most important office, who is second to none in this country in his great attainments in almost every department of accurate science, in his indefatigable and systematic industry, in his high sense of public duty, and in his profound knowledge both of physical and of practical astronomy.

The names which I shall next bring before your notice are those of three men, venerable alike for their great age and public services, and who must always be regarded as entitled to hold a distinguished place amongst that illustrious body of great men, who have been produced or brought forward by the important trusts, the varied employments, and, let me add likewise, the great rewards of our Indian empire; I mean Sir Charles Wilkins, Mr. Marsden, and Captain Horsburgh.

Sir Charles Wilkins went to India in 1770, and was the first Englishman who thoroughly mastered the difficulties of the Sanscrit language, of the classical works in which he published several translations, and smoothed the obstacles to its attainment by a noble grammar, which he composed for the especial benefit of the students of the East India college at Hayleybury, of which he was the oriental visitor and examiner from the period of its first establishment. He formed with his own hand the matrices of the first Bengali and Persian types which were used in Bengal, and he was the chief agent, in conjunction with Sir William Jones, in the establishment of the Asiatic Society of Calcutta, whose labours have contributed so greatly to the advancement of our knowledge of the languages and general condition of the provinces of our Eastern empire. It is now more than fifty years since he returned to this country, in possession of a competent fortune and vigorous health, which he continued to enjoy, in conjunction with every social and domestic comfort, with hardly any interruption, to the day of his death. Sir Charles Wilkins was appointed, in 1800, Librarian of the great collection of Oriental MSS., which are preserved in the India House; and this Society is indebted to him for the catalogue and description of the Sanscrit and other Oriental MSS., which were presented to it by Sir William and Lady Jones.

Sir Charles Wilkins was the father-in-law of Mr. Marsden, though nearly his cotemporary in age. They went to the East about the same time, and whilst one devoted himself to the study of the languages and literature of the ancient and modern inhabitants of continental India, the other availed himself of his position on the great island of Sumatra and the Malayan peninsula, to gain a thorough acquaintance with the present condition and past history of that active and adventurous race, whose character has been so deeply and so generally impressed upon the languages and customs of nearly all the tribes who inhabit the innumerable islands of the Indian Archipelago and of the Pacific Ocean. His account of Sumatra, which appeared soon after his return from the East, may be considered as a model for all monographs of the history, languages, customs, and statistics of a particular nation. He subsequently published a Malay dictionary of great authority and value; and in many separate memoirs, one of which appeared the year before his death, he traced with great learning and research the general characters and analogies of the East Insular and Polynesian languages, and proposed an alphabet for their uniform and intelligible transcription. Mr. Marsden was the author of four papers in our Transactions on some remarkable natural phenomena in the island of Sumatra, on the Mahometan æra of the Hejira, and on the chronological periods of the Hindoos; the two last of which show a very extensive acquaintance with Arabian and Hindoo literature. He published very elaborate catalogues of his fine collections of vocabularies and grammars, and also of his oriental coins; the first of which he presented in his life-time to King's College, London, and the second to the British Museum. Mr. Marsden returned to England from the East at an early age, and was Secretary to the Admiralty during the most eventful period of the late war. He continued to enjoy to an extreme old age, extraordinary vigour both of mind and body, equally respected and beloved for his great learning and very varied acquirements, for his independent and disinterested character, and for his many social and domestic virtues.

Captain James Horsburgh entered the sea service of the East India Company at a very early age, and in a very humble capacity, and raised himself by his perseverance, good conduct, and strong natural talents to the command of a ship, in which he was employed, for a considerable time, in a hydrographical survey of many of the coasts and islands of the Indian and Chinese seas. It was soon after his return to Europe in 1805, that he communicated to this Society, through Mr. Cavendish, his very remarkable observations of the equatropical motions of the mercury in the barometer when at sea; and contributed along with Captain Flinders, both by these observations and by other directions which he subsequently published, to make more fully known the importance of barometrical observations at sea, as affording indications of great or sudden atmospheric changes. Captain Horsburgh was soon afterwards appointed Hydrographer to the East India Company, with the usual judgement, and discrimination of the Directors of that Body, in the selection and rewarding of their officers; and it was in this capacity that he published not merely a great number of charts, but also "the East India Sailing Directory," the result of the unremitting labour of many years, and founded partly upon his own observations, and partly upon a very accurate examination and reduction of the vast hydrographical records which are in the possession of the East India Company; forming altogether one of the most valuable contributions that was ever made by the labours of one man to the interests of navigation. Captain Horsburgh was the author of other works connected with his favourite science, and he continued to devote himself, until within a few days of his death, with almost unexampled industry, to those pursuits which had formed, throughout his whole life, the means by which he sought to benefit his countrymen and mankind.

Mr. William Blane was the author of a paper in our Transactions, written fifty years ago, on the production and preparation of Borax, which is brought from Jumlat in Thibet, over the Himalaya mountains into Hindostan.

Dr. David Hosack, of New York, was the author of a paper in our Transactions, published in the year 1794. It related to the explanation of the power which is possessed by the eye of adapting itself to different distances, which he attributed to the action of the external muscles of the eye, and not to the dilatation and contraction of the iris, nor to the muscularity of the crystalline lens, by which its convexity could be increased or diminished, a doctrine which had been promulgated in a paper by Dr. Thomas Young, in the preceding year. This subject is one of great interest, and has been very frequently agitated; and though an illustrious foreigner, M. Arago, has recently defended the theory of Dr. Young with great ingenuity and warmth, yet physiologists and anatomists are by no means agreed on the adoption of this or any other single explanation.

Mr. John Bell was Senior Wrangler at Cambridge in 1786, and a Fellow of Trinity College. Though labouring under physical disadvantages of no ordinary kind, and such as were apparently the most adverse to success in the public exercise of his profession as a lawyer, yet he conquered every difficulty and reached the highest eminence by his great acuteness and strength of mind, his extensive legal knowledge, and, not a little, likewise, by his sturdy integrity and love of truth, which he respected,—a rare virtue—, even in advocating the claims of a client. Mr. Bell, with an uncommon exercise of philosophy, retired from the active duties of his profession, whilst in the receipt of a splendid income from it, on the first warnings of the approaches of the infirmities of old age. He was a man of great liberality and kindness of heart, and remarkable for the steadiness of his attachment to a large circle of professional and other friends.

The Rev. William Lax, formerly Fellow of Trinity College, and Lowndes's Professor of Astronomy and Geometry in the University of Cambridge, was Senior Wrangler in the year preceding Mr. Bell, and throughout life one of his most intimate friends: he contributed two papers to our Transactions; one in 1796, on a subject of no great importance, and the other in 1809, on the method of examining the divisions of astronomical instruments, in the same volume which contained papers on similar subjects by Mr. Cavendish and Mr. Troughton. The method proposed by Mr. Lax, though very ingenious, requires great labour and time, and is inferior in accuracy and efficiency to that which was adopted by Mr. Troughton for tabulating the errors of the primary divisions of circular instruments. Professor Lax was the author of Tables to be used with the Nautical Almanack, and he had built a small observatory at his residence in Hertfordshire, where he occupied himself for the last thirty years of his life with studies and pursuits connected with the advancement of astronomy.

Sir John Sinclair devoted nearly the whole of a very long and laborious life to pursuits and inquiries connected with the improvement of agriculture and the general benefit of his countrymen. He was a very voluminous author; and though different opinions may be entertained of the merit and usefulness of some of his later productions, the Statistical Account of Scotland which he originated, and arranged, will be a durable monument to his memory, presenting as it does a more complete and comprehensive record of the state of that kingdom at the period when it was compiled, than is to be found in the literature of any other country.

Dr. John Gillies, venerable alike for his great age and his amiable character, was the successor of Dr. Robertson, as the king's historiographer for Scotland: he was the author of a History of Greece and of the World from the conquests of Alexander to the age of Augustus, and he translated some of the Greek orators, the ethical, political and rhetorical treatises of Aristotle, upon whose speculative works generally he wrote a very enlarged commentary. He was a pleasing and popular writer, though not very profoundly acquainted with the great advances which have been made of late years in Germany and elsewhere in our knowledge of archæology and historical criticism.

Sir William Gell was well known as a topographical antiquary, and published works of great interest and research, some of them very splendidly embellished, on Pompeii, and on the modern, as illustrating the ancient topography of Troy, Ithaca, the Peloponnesus, Attica and Rome. He was a very accomplished artist and a man of great liveliness of conversation, and of very attractive manners. Sir William Gell was formerly Fellow of Emanuel College, Cambridge, and was attached, for some time, in the quality of Vice-chamberlain, to the late Queen Caroline. He spent the later years of his life, a victim to the gout and other infirmities, at Naples, in the neighbourhood of those remarkable ruins which he had so carefully and so beautifully illustrated, and which continued to supply him, from day to day, with fresh objects of interesting inquiry.

Dr. Warren, though one of the most distinguished physicians in this metropolis, contributed very little, by his writings, to medical or general literature: he was considered to be an accomplished classical scholar, and a man of very extensive acquirements: he was a strenuous vindicator of the character and independence of his profession, and though his manners were somewhat abrupt, and sometimes apparently uncourteous, yet he was a man of very warm affections, and greatly beloved and respected by a large body of friends.

Those to whom Dr. William Elford Leach was known in his happier days, when in the full enjoyment of health and reason, can best appreciate the great loss which the natural sciences and our national museum sustained by that melancholy visitation, which, like the hand of death, terminated his scientific labours. His enthusiastic devotion to his favourite studies, his great knowledge of details, combined with no inconsiderable talents for classification, were eminently calculated to raise him to the very highest eminence as an original and philosophical naturalist. Though his career of research and discovery was prematurely cut short, yet we are chiefly indebted to him for the first introduction into this country of the natural system of arrangement in conchology and entomology, and for the adoption of those more general and philosophical views of those sciences which originated with Latreille and Cuvier. Dr. Leach was the author of a paper in our Transactions on the genus Ocythoë, to prove that it is a parasitical inhabitant of the Argonaut. He wrote several memoirs in the Linnæan Transactions; an excellent treatise on British Malacostraca: and he also contributed largely to the Zoological Miscellany, to Brewster's Encyclopædia and to the French *Dictionnaire des Sciences Naturelles.* He died of an attack of cholera on the 25th of August last, at the Palazzo St. Sebastiano, in the province of Tortona in Italy.

The last name which occurs in the melancholy list of our departed compatriot associates, is that of Dr. William Henry, to whom the science of chemistry generally, and of gaseous chemistry in particular, is under great obligations. He was the author of nine papers in our Transactions, many of them of great merit; and his System of Chemistry is one of the best written and best arranged compendiums of that important and extensive science, which has been published of late years, whether in our own language or in any other. The Memoirs of the Manchester Society are chiefly indebted to him, in conjunction with Dr. Dalton, for the high character which they have so long maintained. Dr. Henry, like Dr. Wollaston, made the results of science, obtained by the most original and difficult researches, the foundation of a splendid fortune, and few persons have contributed more effectually, by their discoveries and exertions to the promotion of those arts and manufactures which form the foundation of the prosperity of a great commercial nation.

The names of the Foreign members whom the Society has lost during the last year are, André Marie Ampère and Antoine-Laurent de Jussieu, both of them members of the Académie des Sciences de France.

Mons. Ampère was born at Lyons in 1775, and made his first appearance in the scientific world in a short work which showed considerable command of analysis, entitled *Considérations sur la Théorie Mathématique du Jeu,* in which the question of the safety of habitual and indefinite play, either against a single person of greater fortune, or indifferently against any number of persons, even when the game is perfectly fair and equal, is discussed and solved, and its result exhibited in a form full of warning to those by whom gaming is pursued as an occupation, in which success or failure is considered as the gift of fortune, and not the inevitable result of calculation. M. Ampère was subsequently appointed Professor of the Polytechnic School, and published memoirs on the integration of partial differential equations, and on other subjects, which show a profound knowledge of some of the most refined and difficult artifices of analysis: to him likewise we are indebted for memoirs on the Mathematical Theories of Electro-magnetic Currents, which are remarkable for the skill and ingenuity with which the powers of analysis are brought to bear on subjects apparently the most remote from their operation. His inquiry into the equation of Fresnel's wave surface is more remarkable as an example of resolute perseverance than of success, and his last work, on the Philosophy of the Sciences, showed him to be much less happy in his metaphysical, than in his physical and analytical speculations. M. Ampère was a man of great simplicity of character, and his extraordinary fits of absence of mind were not unfrequently made the subject of much innocent amusement. He took no part in the cabals and jealousies which too frequently disturb the peace of the world of science, and he was universally respected and beloved for his great integrity and the kindness of his affections.

Antoine-Laurent de Jussieu, a name singularly illustrious in the annals of botanical science, was born at Lyons in 1748. He was nephew to the great Bernard de Jussieu, under whose auspices he was first introduced into the scientific world of Paris, and appointed, at a very early age, demonstrator of botany in the Jardin du Roi. After this appointment, though originally destined for the profession of medicine, he devoted himself almost exclusively to the study of botany, more especially with a view to the establishment and developement of the natural system of arrangement, a very bold and successful approximation to which had been effected by his uncle in the distribution of the plants in the Garden of the Trianon.* He succeeded his uncle as administrator of the Jardin des Plantes in 1779, and published two memoirs of great originality and importance on the relative value of characters in the distinction of the genera and orders of plants. In the year 1789 he published his great and truly classical work entitled *Genera Plantarum secundum Ordines naturales disposita*, which caused a total revolution in the science of botany. To the modification and extension of the views contained in that work, rendered necessary by new observations and by the vast accession of new genera and orders, brought from the tropics, South America, Australia, and elsewhere, he devoted the remainder of his life. His later memoirs, many of which are of great value, are chiefly contained in the *Annales*, and subsequently in the *Mémoires du Museum d'Histoire Naturelle*. M. de Jussieu was a man of very simple manners and amiable character, of a social and affectionate temper, and a perfect stranger to scientific jealousies and intrigues. He attained to an extreme old age, and had the happiness of witnessing the almost universal adoption of that system of botanical arrangement, the establishment of which had formed the great object of the labours of his life.

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* This arrangement, made in 1759, is given by his nephew at the conclusion of

The Secretary then read the following Report of the Proceedings of the Council since the last Anniversary.

The Council, on the 3rd of March, adopted a Report, submitted to them by the Committee whom they had appointed for considering the communications from the Treasury and Excise Office, on the subject of the construction of instruments and tables for ascertaining the strength of spirits, in reference to the charge of duty thereon, and ordered it to be transmitted to the Lords Commissioners of His Majesty's Treasury; who, in acknowledging its receipt, were pleased to express "their best thanks to H. R. H. the President, and to the Society, for the obliging manner in which they had met the wishes of the Board, and to the Committee for the attention they gave to the subject, and for the valuable Report with which they had furnished that Board."

The Council, conformably with the recommendation of the Donation Fund Committee, have granted £50 from that fund to Professor Wheatstone, in aid of the experimental inquiry which he is prosecuting on the measure of the velocity of Electricity when passing along a conducting wire.

A letter from Baron Von Humboldt, addressed to H. R. H. the President, relating to a proposal for the cooperation of the Royal Society in carrying on an extensive series of magnetical observations, in various parts of the earth, having been communicated by H. R. H. to the Council, it was referred to the Astronomer Royal and to S. H. Christie, Esq., for their opinion thereupon. The Report of

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his introduction to his great work, published in 1789: though extremely imperfect and in many respects erroneous, it was founded upon just principles, and was in almost every respect superior to those which had been proposed by Linnæus and by Tournefort.

these Gentlemen was ordered to be read to the Society and printed in its proceedings; and a Committee has been appointed to consider of the best means of carrying into effect the measures recommended in that Report.

A paper, delivered to the Secretary at one of the ordinary meetings of the Society, entitled "Requisition for a Special General Meeting of the Royal Society," and signed by six of the Fellows, stating the purposes of such special meeting to be "to consider and determine the necessity of expunging from the Journal Book of the Society" certain minutes of its proceedings, and also "to consider the principle of a resolution, passed at an ordinary meeting of the Society, by which their thanks were withheld from the author of a work presented by him to the Society," having been laid before H. R. H. the President and Council, they were unanimously of opinion that no special meeting has the power of expunging minutes of past proceedings of the Society. The Council accordingly ordered a Special General Meeting of the Society to be called, for the purpose of taking into consideration only the latter of the two objects stated in the requisition.

Mr. Monk Mason having, in a letter addressed to H. R. H. the President, offered the Great Vauxhall Balloon for the use of the Society, a Committee was appointed to take this proposition into consideration and to report thereupon to the Council.

The Council have awarded a Copley Medal to Baron Berzelius for his application of the Doctrine of Definite Proportions in Determining the Constitution of Minerals. To the labours of this distinguished chemist, science is indebted for many of the facts by which the Laws of Definite Union were established. As early as 1807, soon after Dalton and Gay-Lussac had made known their views on this vital branch of modern chemistry, Berzelius commenced an elaborate examination on the proportions in which the elements of compound bodies are united, beginning with the salts, and subsequently extending his researches to all other departments of his science, as well to the products of organized existences as to those of the mineral world. The first part of the inquiry appeared in a series of essays in the Afhandlingar i Fysik, Kemi, och Mineralogie, t. iii. iv. v. and vi., as also in the Memoirs of the Academy of Sciences of Stockholm, for the year 1813. Since that period he has almost constantly been more or less occupied with researches bearing, or illustrative of, the same subject. His numerous analyses of minerals enabled him at once to elucidate their nature through the light derived from the laws of definite combination, and at the same time to supply in the composition of minerals a splendid confirmation of the universality of those laws. It is for this branch of his inquiry that the Copley Medal has been awarded.

A Copley Medal is also awarded to Francis Kiernan, Esq., for his discoveries relative to the Structure of the Liver, as detailed in his paper communicated to the Royal Society, and published in the Philosophical Transactions for 1833.

Before the researches of Mr. Kiernan, the liver was supposed to consist of two dissimilar substances, composed of brown parenchymatous granules, contained in a yellow substratum. The relation of the vessels and excretory ducts to these supposed dissimilar substances was not known; nor, although the organ was considered to be a conglomerate gland, were the glandules of which it was conjectured to be composed, defined in magnitude, shape, or disposition. Mr. Kiernan's discoveries show that in place of two textures there exists but one; and that the difference of colour results from the accidental congestion of one or other of the systems of vessels, which are found in the liver. Mr. Kiernan has further satisfactorily demonstrated the size and limits of the integral glandules of which the liver consists. He has traced the relation to these glandules of the different orders of vessels, which are distributed through the organ, and has explained the mechanism of biliary secretion. He has shown that all the blood employed in secreting bile is venous; and that the origins of the biliary ducts differ in an important respect from the origins of the ducts of all other glands: inasmuch as they form a series, not of coiled or branching tubes, but of anastomosing vessels, constituting a tubular network.

Mr. Kiernan's researches display great industry and ingenuity; when foiled by the difficulties which had foiled preceding anatomists, he applied a principle that had not been thought of before to facilitate the investigation of structure. Hitherto, however eminent the English have been in physiology, (and the most eminent of physiologists, Harvey, was an Englishman,) they have been behind the Germans and the Italians in anatomy. The discovery which Mr. Kiernan has made, exceeds in originality, and in importance is scarcely inferior to any single anatomical discovery on record. Its originality consists in this; it may be estimated from the circumstance that nothing which had been previously done on this subject affords a clue to what *he* has found; and the difficulty of the inquiry may be understood from this; that although many had undertaken it, all had previously failed. The importance of the facts displayed may be gathered from the consideration, that they greatly elucidate the morbid anatomy of the liver,—a part of the human frame, which is remarkable for the frequency and variety of its diseases, and at the same time for the facility with which it may be influenced by remedial agents.

The Royal Medal for the present year, which the Council had proposed to give to the most important paper in Astronomy communicated to the Royal Society within the last three years, is awarded to Sir John Frederick William Herschel, for his Catalogue of Nebulæ and Clusters of Stars, published in the Philosophical Transactions for 1833.

In delivering this Medal His Royal Highness addressed the Society as follows:—

This, Gentlemen, is the second time that a Royal Medal has been adjudged to Sir John Herschel, for researches in a department of Astronomy which has descended to him as an hereditary possession;

and I believe I may venture to say, that in no case has a noble inheritance been more carefully cultivated or more enriched by new acquisitions. The catalogue for which the Royal Medal is now given, contains a list of 2500 nebulæ and clusters of stars, the same number which had been observed and catalogued by his father, though only 2000 of them are common to both catalogues; the right ascensions and declinations of all these objects are determined; the general character of their appearance recorded; and all those which present any very extraordinary character, shape, or constitution, of which there are nearly 100, are drawn with a delicacy and precision which is worthy of an accomplished artist. It presents a record of those objects so interesting as forming the basis of our speculations on the physical constitution of the heavens which are observable in this hemisphere, which is sufficiently perfect to become a standard of reference for all future observers, and which will furnish the means of ascertaining the changes, whether periodical or not, which many of them are probably destined to undergo. I trust, Gentlemen, that a long time will not elapse before we shall be enabled to welcome the return of Sir John Herschel to this country, with materials for a catalogue of the nebulæ of the southern hemisphere as perfect and as comprehensive as that which we are this day called upon to signalize with the highest mark of approbation which it is in our power to bestow. He will then have fixed the monuments of an imperishable fame in every region of the heavens.

The Royal Medal for the present year, which the Council had proposed to give to the most important paper in Animal Physiology communicated to the Royal Society within the last three years, is awarded to George Newport, Esq., for his series of investigations on the Anatomy and Physiology of Insects, contained in his two papers published in the Philosophical Transactions within that period.

Mr. Newport, to whom the Society was indebted in 1832 for a very valuable and elaborate anatomical investigation of the nervous system of the *Sphinx ligustri* of Linnæus, and of the successive changes which that insect undergoes during the state of larva, and the earlier stages of the pupa state, published in the Philosophical Transactions of that year, has since prosecuted this arduous and laborious train of inquiry, under circumstances of peculiar difficulty, with extraordinary zeal and indefatigable perseverance. Within the period of the last three years he has enriched the Transactions with two papers, in the first of which, read to the Society in June 1834, he has extended his researches into the structure and arrangement of the different portions of the nervous system of the same insect, following their successive changes through the remaining stages of developement to the completion of the imago, or perfect state. He devotes particular attention to the study of the periods at which those several changes occur; for he has found that they vary considerably in the rapidity of their progress at different epochs, according as the vital powers are called into action by external influences, or as they become exhausted by their efforts in effecting the growth, or modifying the form of different systems of organs. The labours of Mr. Newport have determined, with great exactness, those periods, which had not before been ascertained.

Among the numerous original observations of Mr. Newport on the arrangement and connexions of the several parts of the nervous system, the description he gives of the origin and distribution of the visceral nerve, which he shows to be analogous to the pneumogastric nerve of vertebrated animals, and also of the system of nerves corresponding to those which have been considered as peculiarly subservient to the supply of the respiratory organs, are particularly deserving of notice. In the course of this investigation many new and important facts are brought to light, which had escaped the observation of Lyonet, Müller, Brandt and Straus-Durkheim. Mr. Newport has also traced a remarkable analogy in the origin and distribution of the two distinct classes of nerves, the one subservient to sensation, and the other to volition, belonging to insects, with those belonging to vertebrated animals, and has thus given greater extension to our views of the uniformity existing in the plans of animal organization than we before possessed, and which are thus made to comprehend the more minute, as well as the larger tribes of the animal creation.

In a memoir on the Respiration of Insects, more recently communicated to the Society, and of which, at its last meeting in June, the title only could be announced, Mr. Newport has, with great diligence and success, investigated the variations occurring in this function in the different periods of insect developement. He has minutely traced the several changes which the tracheæ and spiracles undergo during the transformations of the insect, and has particularly described the successive developement of the air-vesicles in connexion with the power of flight. He has given a minute and accurate description of the system of muscles, both of inspiration and of expiration, of the *Sphinx ligustri*; has investigated their various modes of action, with reference more especially to the different classes of nerves appropriated to these functions; and has established a distinction in the offices of these nerves, corresponding to the sources from which they derive their origin, and presenting remarkable analogies with similar distinctions in the nerves of vertebrated animals. He has given the result of a series of original experiments on the products of respiration in this class of animals, and of their variations under different circumstances of temperature, of submersion, and of confinement in unrespirable and deleterious gases; and he has deduced important conclusions relative to the circumstances which govern the properties of oxygen consumed and of carbonic acid generated. He has also communicated various results to which he has arrived concerning the capabilities which insects possess of supporting life during longer or shorter periods, when immersed in different media.

For the original views presented in these two papers, as well as for the mass of valuable information they contain, the results of much laborious and well-directed research in the more difficult departments of the Anatomy and Physiology of Insects, prosecuted under circumstances which would have repressed the exertions of a less ardent inquirer into truth, the Council have considered Mr. Newport as highly deserving the distinction they have conferred upon him by the award of the Royal Medal for Animal Physiology in the present year.

The Council propose to give one of the Royal Medals in the year 1839 to the most important unpublished paper in Astronomy communicated to the Royal Society for insertion in their Transactions after the present date, and prior to the termination of the Sessions in June 1839.

The Council propose to give one of the Royal Medals in the year 1839, to the most important unpublished paper in Physiology, communicated for insertion in their Transactions after the present date, and prior to the termination of the Sessions in June 1839.

The Statutes relating to the election of Council and Officers were then read by the Secretary; and Davies Gilbert, Esq., and Francis Kiernan, Esq., being nominated by the President, with the approbation of the Meeting, Scrutators to assist the Secretaries in examining the Balloting Lists, the Votes of the Fellows present were collected.

The Ballot being taken, the Scrutators reported the following as the result:

President: His Royal Highness the Duke of Sussex, K.G.—*Treasurer:* Francis Baily, Esq.—*Secretaries:* Peter Mark Roget, M.D.; John George Children, Esq.—*Foreign Secretary:* Charles Konig, Esq.

Other Members of the Council: George Biddell Airy, Esq., A.R.; William Allen, Esq.; John Bostock, M.D.; The Earl of Burlington; Samuel Hunter Christie, Esq.; Viscount Cole, M.P.; Joseph Henry Green, Esq.; George Bellas Greenough, Esq.; William Lawrence, Esq.; John Lindley, Phil. D.; John William Lubbock, Esq., M.A.; Rev. George Peacock, M.A.; William Hasledine Pepys, Esq.; Rev. Adam Sedgwick, M.A.; William Henry Smyth, Capt. R.N.; William Henry Fox Talbot, Esq.

The Thanks of the Society were then voted to the Scrutators for their trouble in assisting at the election.

The following is the statement with respect to the Receipts and Payments of the Society during the preceding year, which was laid on the table by the Treasurer.

Statement of the Receipts and Payments of the Society between Nov. 28, 1835, and Nov. 29, 1836.

1. Receipts.

	£.	s.	d.	£.	s.	d.
Balance in the hands of the Treasurer at the last Audit ..				218	3	8
40 Weekly Contributions, at one shilling				104	0	0
103 Quarterly Contributions, at £1				391	0	0
29 Admission Fees				290	0	0
2 Compositions for Annual Payments at £40.				80	0	0
7 Compositions for Annual Payments at £60.				420	0	0
Rents :—						
One year's rent of estate at Mablethorpe: due at Michaelmas, (less the expenses of defending the suit, £13 17 6)...........	93	2	6			
One year's rent of lands at Acton: due at Michaelmas	60	0	0			
One year's fee-farm rent of lands in Sussex; land-tax deducted: due at Michaelmas ..	19	4	0			
One fifth of the clear rent of an estate at Lambeth Hill, from the Royal College of Physicians, in pursuance of Lady Sadleir's will: due at Midsummer..................	3	0	0			
Interest to Christmas 1835 on the produce of the sale of the Coleman-street premises ..	42	13	8			
				218	0	2
Dividends on Stock —:						
One year's dividends on £14,000 Reduced 3 per cent. Annuities	420	0	0			
Dividend on £3452. 1. 1 Consols, the produce of the premises in Coleman-street, sold ..	51	15	7			
Donation Fund.						
One year's dividends on £3820. 19. 3 Consols	114	12	6			
Pulteney Fund.						
One year's dividends on £200 Consols	6	0	0			
Rumford Fund.						
One year's dividends on £2161. 0. 10 Consols	64	16	8			
Fairchild Fund.						
One year's dividends on £100 New South Sea Annuities	3	0	0			
				660	4	9
Carried forward				£2381	8	7

				£.	s.	d.
Brought forward........				2381	8	7
From the Lords of the Treasury, being the amount of sundry items paid on account of the Excise Committee in the present and preceding years.....................	135	17	0			
Miscellaneous Receipts:—						
Sale of Philosophical Transactions and Abstracts of Papers	313	11	8			
Sale of Sir H. Davy's Discourses..........		15	0			
				450	3	8
Total Receipts				£ 2831	12	3

2. PAYMENTS.

	£.	s.	d.	£.	s.	d.
Lady Sadleir's Legacy.—The Poor of the Parish, in pursuance of Lady Sadleir's Will..............................				3	0	0
Fairchild Lecture.—The Rev. J. J. Ellis, for delivering the Fairchild Lecture.................................				3	0	0
Bakerian Lecture.—John William Lubbock, Esq., for the Bakerian Lecture................................				4	0	0
Donation Fund.—Mr. Wheatstone, for Experiments				50	0	0
Salaries:—						
Dr. Roget, one year, as Secretary	105	0	0			
J. G. Children, Esq., one year, as Secretary..	105	0	0			
Ditto for Index to Phil. Trans.	5	5	0			
C. Konig, Esq., one year as Foreign Secretary	20	0	0			
Mr. Roberton, one year, as Assistant-Secretary	160	0	0			
Mr. W. E. Shuckard, one year as Librarian..	50	0	0			
Mr. Gould, one year, as Porter	60	0	0			
				505	5	0
Fire Insurance, on the Society's Property				22	11	6
Mrs. Coppard: Gratuity............................				10	0	0
Excise Committee (*repaid by the Lords of the Treasury*):						
Printing Proceedings of Excise Committee	19	16	0			
Mr. Russell, for calculating Tables......	55	0	0			
Mr. Jones, for calculating Tables	10	0	0			
Mr. Newman	3	4	4			
				88	0	4
Taylor: on account of printing the Catalogue				200	0	0
Carried forward				£ 885	16	10

				£.	s.	d.
Bills :— Brought forward				885	16	10
Taylor :						
Printing the Phil. Trans., 1835, part 2, and 1836, part 1; Proceedings, Nos. 22—25; Circulars, Lists of Fellows, Ballot-lists, Statement of Payments, and Minutes of Council, &c.	340	10	6			
Bowles and Gardiner :						
Paper for the Phil. Trans., 1836, parts 1 and 2	207	4	0			
Basire :						
Engraving and Copper-plate Printing for the Phil. Trans., 1836, parts 1 and 2, &c.	343	9	3			
Walker :						
Engraving for Phil. Trans., 1836, part 2.	54	3	0			
Gyde :						
Sewing and Boarding 1650 Parts of Phil. Trans.	56	6	8			
				1001	13	5
Mr. Bassett: Surveying, (*last year*)	38	19	0			
Few & Co., Solicitors	41	9	7			
Tuckett :						
Bookbinding	37	6	8			
Chappell :						
Stationery	25	17	0			
Saunderson :						
Shipping expenses	9	10	3			
Brecknell and Turner :						
Wax Lights, Candles, and Lamp Oil	35	16	0			
Skelton :						
Cleaning Chandeliers; and repairing Lamps, Locks, &c.	7	6	2			
Cubitt :						
Repairing Window Frames, Map Cases, &c.	44	17	8			
Varnham :						
Map Cases	14	19	6			
Cobbett and Son :						
Window-cleaning and Glazing	1	15	0			
Gwillim :						
Large Mats, Brushes, Fire wood, &c.	5	3	8			
Exchequer Fee		6	6			
Arnold and Dent :						
Cleaning and Regulating Clocks	4	4	0			
Wood :						
For Coals	30	16	0			
Troughton and Simms :						
Repairing Instruments	7	8	6			
				305	15	6
Carried forward				£2193	5	9

				£.	s.	d.
Brought forward........				2193	5	9
Taxes and Parish Rates :						
Window Tax	11	1	9			
Land Tax	3	15	0			
Poor Rate	8	0	0			
Church Rate	2	15	0			
Rector's Rate........................	1	0	0			
				26	11	9
Petty Charges :						
L'Institut Journal		15	0			
Postage and Carriage..................	17	2	2			
Extra Porterage........................	1	4	0			
Expenses on Foreign Packets, &c.........	7	12	9			
Stamps	1	5	6			
Cleaning Library		19	6			
Charwoman's Wages	27	6	0			
Extra Charwoman's work	3	10	6			
Miscellaneous expenses	18	14	5			
				78	9	10
Total Payments				£2298	7	4
Balance in the hands of the Treasurer				533	4	11
				£2831	12	3

FRANCIS BAILY, *Treasurer.*

November 29*th*, 1836.

The Treasurer remarked, that all the sums due to the Society have been collected, except £35. 2*s*. 0*d*. owing by six defaulters. And all the claims on the Society have been paid, excepting three unsettled bills amounting to about £100.

The Treasurer also made the following statement with respect to the number of Fellows, viz :

	Patron and Honorary.	Foreign.	Having compounded.	Paying 2*l*. 12*s*. Annually.	Paying 4*l*. 0*s*. Annually.	Total.
November, 1835	10	48	598	41	96	793
Since elected	......	......	+9	......	+21	
Since deceased	......	−2	−17	−4	−2	
Since compounded	......	......	+1	......	−1	
Defaulters	......	......	......	......	−5	
November, 1836	10	46	591	37	109	793

The Treasurer farther remarked, that, agreeably to the practice of preceding Treasurers, the several *trust* accounts are blended with the statement of the property belonging to the Society. But it may be the subject of consideration whether such accounts ought not, in future, to be kept totally distinct and separate. At the last anniversary there was a balance of £356. 5*s*. 10*d*. arising from the sale of MSS. to the British Museum, which, together with the balances on the Rumford and Donation funds, were then (and are now) included in the general assets of the Society; but which must be specially appropriated to particular purposes, and not to the general expenditure of the Society.